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REMARKS

Upon entry of this amendment, which amends claim 1 and cancels claims 15-18, claims 1-14 and 19-23 are pending in the present application. Applicants reserve the right to file claims 15-18 in a separate application.

Applicants note that claim 1 was amended to correct a typographical error. Specifically, the word "to" was deleted.

Claims 1-14 and 19-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (U.S. Pat. No. 5,943,581, hereinafter "Lu") in view of Michaelis (U.S. Pat. No. 6,156,606) and further in view of Ballantine et al. (U.S. Pat. No 6,271,100, hereinafter "Ballantine").

As best understood, the rejection asserts that Lu discloses all claimed subject matter, but fails to expressly disclose the exposed sidewall surfaces of the trench are annealed in a hydrogen ambient environment. Michaelis is cited as disclosing the step of annealing the sidewall surfaces of the trench using hydrogen gas at temperatures of between 600-800 °C to remove any native oxide from the side wall surfaces, expose the bare silicon of the substrate, and obtain a rutile crystal structure. Further, the rejection asserts that Ballantine discloses the step of annealing the sidewall surfaces of the trench using a hydrogen gas at the temperatures of between 900-1000 °C at about a pressure of 100 Torr or less to substantially reduce stress at corner regions that exist between the trench and the substrate. The rejection then asserts that it would have been obvious in view of Lu, Michaelis, and Ballantine to anneal the trench to reduce the number of defects in the trench created during the step of forming, and to round the corners at the open and closed ends of the trench.

Applicants respectfully submit that Lu and Michaelis, either alone or in combination, disclose or suggest every element of claims 1-14 and 19-23. For example, in amended claim 1, "annealing the trench to: (1) reduce the number of defects in the trench created during the step of forming, and (2) round corners at the open and closed ends of the trench" is not disclosed or suggested. Additionally, independent claims 6, 9, and 19 include either one or both of the above elements.

Also, applicants respectfully submit that Ballantine does not qualify as prior art under the provisions of 35 U.S.C. §103. Ballantine was filed on Feb. 24, 2000. The present application was filed on Nov. 24, 1999. Ballantine was filed after the filing date of the present application and thus, applicants respectfully submit that Ballantine is not prior art.

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Accordingly, in view of Ballantine not being prior art, applicants respectfully submit that Lu and Michaelis do not disclose or suggest every element of claims 1, 6, 9, and 19.

Claims 2-5, 7-8, 10-14, and 20-23 depend from independent claims 1, 6, 9, and 19 and thus, derive patentability at least therefrom. Accordingly, applicants respectfully request withdrawal of the rejections.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

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Respectfully submitted,

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DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on April 22, 2004 has been received and carefully considered. Claims 2, 3 and 5-7 are cancelled. Claims 1 and 4 remain active.

Response to Arguments

2. Applicant's arguments filed on April 22, 2004 with respect to the rejection of claims 1 and 4 under 35 U.S.C. 103(a) as being unpatentable over Tamaru (JP 08-000950) in view of Johnson (US 2,931,580) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of the newly found prior art references, below.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamaru et al. (JP 08-000950) in view of Dijkstra (US 2,953,306) and Deering et al. (US 3,342,193).

With respect to claim 1, Tamaru et al. disclose a wet gas desulfurizing apparatus for absorbing the sulfur oxides of an exhaust gas with an absorption liquid ([Sections 0002-0003]), said apparatus comprising a branch pipe 12 of diameter **D** ([Section 0016], FIG. 3) for circulating an absorption liquid, said pipe 12 extending into a collection tank 4 and having an end which discharges absorption liquid into the collection tank (FIG. 1). Furthermore, Tamaru et al. disclose an air-blowing pipe 14 for injecting air into the pipe 12, said air-blowing pipe having an end inserted into the pipe 12 at an insertion point (mixing point 13). Tamaru et al. also

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disclose the branch pipe 12 extends through a wall of the collection tank 4 (see FIG. 1) in order to discharge the circulating absorption liquid into the absorption liquid in the collection tank 4.

Tamaru et al. are silent as to the air-blowing pipe 14 being inserted into the branch pipe at an insertion point 13 located between 3D and 10D from the discharge end of the pipe 12. However, Tamaru et al. discloses that generating a "foam" by mixing the absorption liquid and air prior to injection improves the diffusion of air in the collection tank and, "it becomes possible to make it blow in into a liquid as a detailed foam also of a mass of gas," interpreted to mean that the foam is still present in the liquid upon reaching the discharge end of pipe 12 (machine translation; [Section 0008]).

Dijkstra (FIG. 3; column 5, lines 25-54) teaches an apparatus for dispersing a gas in the form of small bubbles within a body of liquid contained in a vessel (i.e., tank 5; FIG. 1), said apparatus comprising a branch pipe (i.e., liquid supply pipe 10) for circulating a liquid, said pipe 10 extending into a collection tank 5 and having an end (i.e., orifice 9) which discharges liquid into the collection tank 5 (see FIG. 1). The apparatus further comprises a gas-blowing pipe (i.e., gas supply duct 6) for injecting gas into branch pipe 10, said gas-blowing pipe 6 being inserted into branch pipe 10 at an insertion point located at a distance "... preferably not over five times the maximum pipe diameter, back from the orifice 9 of a nozzle 18 which is fitted to the end of the liquid pipe 10," (column 5, lines 25-31), thereby defining a short mixing chamber 17.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to locate the insertion point 13 in the apparatus of Tamaru et al. between 3D and 10D from the discharge end of the pipe 12 because "... the short mixing chamber 17 through which the mixture-stream flows before issuing from the orifice 9 brings the liquid into contact with the

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gas so as to promote the disruption of the latter into small bubbles and the at least partial distribution thereof already before issue into the liquid body contained in the tank. It was found that with such an arrangement a considerably larger gas to liquid ratio and, at the same time, smaller bubbles can be obtained," as taught by Dijkstra (column 5, lines 35-43).

Dijkstra teaches the apparatus comprising an insertion point structured such that a central axis of the gas-blowing pipe 6 meets with a central axis of the branch pipe 10 at an angle, with the gas-blowing pipe 6 opening facing downstream (see FIG. 3). Additionally, Dijkstra teaches that for a similar embodiment, "While circular orifices were shown, it is evident that *other shapes* may be used," (column 5, lines 15-20); thereby indicating that the precise shape at the end of the gas-blowing pipe 6 is not absolutely critical to the functioning of the apparatus. The collective teaching of Tamaru et al. and Dijkstra, however, is silent as to whether the end of the air-blowing pipe may be configured specifically as a semicircular trough that faces downstream.

In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to configure the end of the air blowing pipe 14 in the modified apparatus of Tamaru et al. in other suitable shapes (such as the instantly recited shape of a semicircular trough) on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the precise shape of the opening selected for the air-blowing pipe is not critical to the generation of the bubble dispersion, as indicated by Dijkstra above, and furthermore, it has been held that changes in shape merely involves routine skill in the art. Also, the substitution of known equivalent structures, such as that illustrated by Deering et al., involves ordinary skill in the art. Deering et al. evidences a known apparatus for injecting one fluid into another fluid, the apparatus comprising an air-blowing pipe (i.e., conduit 3, nozzle 1; FIG. 1;